REMARKS

The paragraphs of the outstanding Office Action are responded to as follows:

1. The foregoing amendment of claims 1, 4, and 11 correct the reasons for objection cited by the Examiner.

2, 3. Claims 1 and 9 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Claim 1, recitation "...a compensation film containing a positive birefringent material oriented with its optic axis tilted in a plane perpendicular to the liquid crystal cell face." is not clear.

The present amendment modifies the term "cell face" to "cell surface". As described at page 1, lines 19-21, FIG. 1 shows "z" as the direction normal to the cell surface. The terms "face" and "surface" were used interchangelable throughout the description (see page 1/line8; page 1/line 21; page 5/line 31; page 6/line 12). It is believed to be clear that a plane perpendicular to the liquid cell face would be one parallel to the axis "z". In other words, the claim requires that the display be oriented so that the optic axis of the birefringent material in the compensation film be tilted in a plane that is perpendicular to the surface of the liquid crystal cell. That birefringent material may be all the same tilt as in claim 13 or may be of variable tilt as in claim 14. The commonality is that the azimuthal angle of the optic axis is the same across the thickness even if the tilt angle varies.

Regarding "Claim 9, ..., that the alignment layer cannot be found in the drawings and cannot be found the corresponding description in the specification to describe such limitation". The alignment layer is not shown in the drawings but is described on page 9. It is well known in the art that the alignment layer is needed to generate a tilt angle such as θ_1 in Fig. 6B. It is not shown because from optical perspective, the alignment layer is negligible due to its thinness and being optically isotropic in general.

4,5 Claims 1-3, 10 and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 6,034,756 (Yuan et al). Contrary to the Examiner's assertion, Fig. 10A does not show the optic axis being perpendicular to the liquid crystal cell face. Page 8, lines 26-28 recites that "For a film with one positive birefringent layer, a projection **66** of optic axis **42** in positive birefringent layer **64** of FIG.7A and 7C corresponds to the direction specified by **78** in FIG.10A." The plane determined by the optic axis 42 and its projection 66 is a plane that is perpendicular to the liquid crystal cell surface. The optic axis 42 is tilted in this plane. The direction specified by 78 in Fig. 10A is a projection of the tilted optic axis, which is not shown in Fig. 10A, but in Fig.7A, as ref. 42 Fig. 4A does not show the optic axis being perpendicular to the liquid crystal cell face, either. The optic axis of the compensation film 27 in the prior art lies in or parallel to the surface of the liquid crystal cell.

Regarding "However, if the Fig. 10A of the embodimet of this application shows the optic axis being perpendicular to the liquid crystal cell surface, then the Fig.4A of the AAPA also shows the optic axis being perpendicular to the liquid crystal cell face".

As clarified above, Fig. 10A does not show the optic axis being perpendicular to the liquid crystal cell face. Page 8, lines 26-28 recites that "For a film with one positive birefringent layer, a projection **66** of optic axis **42** in positive birefringent layer **64** of FIG.7A and 7C correspond to the direction specified by **78** in FIG.10A." The plane determined by the optic axis 42 and its projection 66 is a plane that is perpendicular to the liquid crystal cell surface. The optic axis 42 is tilted in this plane. The direction specified by 78 in Fig. 10A is a projection of the tilted optic axis, which is not shown in Fig. 10A, but in Fig.7A, as ref. 42.

Fig. 4A does not show the optic axis being perpendicular to the liquid crystal cell face, either. The optic axis of the compensation film 27 in the prior art lies in or parallel to the surface of the liquid crystal cell, which is different from the present invention in which the optic axis of the positive birefringent material is tilted in a plane that is perpendicular to the liquid crystal cell face. The optic axis of the compensation film 27 in the prior art does not tilt in a plane that is perpendicular to the liquid crystal cell face (this plane will be the

one determined by the z-axis and the optic axis of he compensation film 27).

Regarding "Besides Yuan discloses (col.3, lines 26-45; Fig.5) that the compensation layer (180) having optic axis in the substrate (182) and it is normal to plane of the LC cell substrate (perpendicular to the liquid crystal cell), and such compensation layer with this tilt can improve the performance of the viewing angle of a TN LCD.

According to US Patent 6,034,756 (to Yuan et al.), the compensation layer (180) includes a discotic compound layer 186. "The optic axis of the discotic compound layer 186 is chosen so that it tilts over the thickness of the discotic compound layer as shown in Fig.5" (Col.3 lines 31-33). It is well known in the art that the discotic compound is negative birefringent material (see US Patent 5,583,679), not positive birefringent material. In order for this negative birefringent material to compensate for the TN LCD, the change in optic axis is designed to mimic to some degree the tilt of the directors in the LC cell (Col.3, lines 36-38). This disclosure does not anticipate the use of a positive material as a compensator for a vertically-aligned LCD. As a matter of fact, the change in optic axis of the positive birefringent material in examples 1-3 (page 12, line 25- page 13, line 14 of this application) do not and cannot mimic the tilt of the directors in the LC cell.

Regarding claim 14, Yuan discloses (col.3, lines 26-45; fig.5), the compensating layer (180) includes substrate (182) (base film), alignment layer (184) and discotic compound layer 186. And the optic axis of the discotic compound layer 186 is changed, and this change in optic axis is designed to mimic to some degree the tilt of the directors in the LC cell, such that the compensation layer with this tilt can improve the performance of the viewing angle of a TN LCD.

Again, as discussed above, it is well known in the art that the discotic compound is negative birefringent material, not positive birefringent material. In order for this negative birefringent material to compensate for the TN LCD, the change in optic axis is designed to mimic to some degree the tilt of the directors in the LC cell (Col.3, lines 36-38). This disclosure does not anticipate the use of a positive material as a compensator for a vertically-aligned LCD. As a matter of fact, the change in optic axis of the positive birefringent material in

examples 1-3 (page 12, line 25- page 13, line 14 of this application) do not and cannot mimic the tilt of the directors in the LC cell.

6. Okazaki does not overcome the defficiencies of Yuan regarding claim 4.

7. US patent 6,115,095 (Suzuki et al.) uses a compensation layer having positive uniaxial, optical ansotropy, and having an optical axis extending perpendicularly to the substrate (col.7, lines 53-56), or uses a first compensation layer having positive uniaxial, optical ansotropy, and having an optical axis extending perpendicularly to the substrate, and a second compensation layer having positive uniaxial, optical ansotropy, and having an optical axis extending in parallel with the substrate and perpendicularly to the initial orientation of the liquid crystal layer (col.8, lines 7-19). Thus the optic axis of the positive compensation layers are not tilted in a plane that is perpendicular to the liquid crystal cell surface. In addition, Suzuki uses the compensation films for compensating an in-plane switching type liquid crystal display (col. 7, lines 36-39; col. 7, lines 48-52; col. 8, lines 4-7; Fig. 1). Thus it does not anticipate of a display having a vertically aligned nematic liquid crystal cell, a polarizer, and a compensation film containing a positive birefingent material oriented with its optic axis tilted in a plane perpendicular to the liquid crystal cell face. Concerning Yuan, it is noted that a discotic compound is a negative biregringent material.

8. US 5,796,456 (takatori et al.) discloses (col.6, lines 15-29) that "a liquid crystal display acording to the present invention has a plurality of pairs of top and bottom pixel electrodes each of which has a plurality of sub-areas to which different voltages are applied, wherein at least any one of the top and bottom pixel electrodes has an optical compensation layer which has an optically negative uni-axial structure (not positive) "

"The above liquid crystal display uses a twisted nematic liquid crystal", which is not a vertically-aligned LCD.

"Additionally, the optically negative axis of the optical compensation may tilt agaisnt an axis normal to the surface of the optical compensation layer". Again, this compensation film is optically negative, unlike the one in this application being optically positive.

9,11-12. US6,319,963 (Coates et al.) does not anticipate the use of a reflective film with a vertically-aligned LC, and a compensation film containing a positive birefingent material oriented with its optic axis tilted in a plane perpendicular to the liquid crystal cell face. The reflective film disclosed in the '963' patent has different motivation. This film, functioning as a broadband reflective polarizer, when used in a liquid crystal display, exhibits a high luminance and a considerable brigghtness gain compared to a conventional linear polarizer (such as a dichroic polarizer) (col. 4, lines 20-26).

The reflective plate according to claim 15 depends on claim 1. The display shows larger viewing angle.

10-13. Okazaki discloses that it is known the optical compensatatory sheet for LCD is prepared on a support film (base film) to support the compensation film. However, it also says (Col. 2, lines 39-40) "Hence, the resulting compensatory sheet scarecely enlarges the viewing angle from all directions."

Takatori (col.6, lines 15-62), as discussed above, US 5,796,456 (takatori et al.) discloses (col.6, lines 15-29) that "a liquid crystal display acording to the present invention has a plurality of pairs of top and bottom pixel electrodes each of which has a plurality of sub-areas to which different voltages are applied, wherein at least any one of the top and bottom pixel electrodes has an optical compensation layer which has an optically negative uni-axial structure (not positive) " The above liquid crystal display uses a twisted nematic liquid crystal", which is not a vertically-aligned LCD.

"Additionally, the optically negative axis of the optical compensation may tilt agaisnt an axis normal to the surface of the optical compensation layer". Again, this compensation film is optically negative, unlike the one in this application being optically positive.

To summarize, the Examiner is attempting to combine combinations of references which cannot appropriately be combined because they

are directed to specific display features different form those of the present claims. The Examiner is attempting to create a prior art mosaic by extracting small pieces of disclosure form different references when one of ordinary skill in the art would know that compensation films used for one type of LC cell cannot be applied to another type of cell. The Examiner is respectfully requested to withdraw the outstanding rejections and to pass the subject application to Allowance.

Respectfully submitted,

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